

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-45 are pending in the present application. Claims 1, 3, 5, 11, 13, 21, 22, 31, and 36 have been amended, and Claims 37-45 have been added by the present amendment.

In the outstanding Office Action, the Information Disclosure Statement (IDS) filed August 22, 2001 was objected to under 37 C.F.R. 1.98 (a)(3); Claims 1-6, 11, 12, 22, 23, 25-29, and 36 were rejected under 35 U.S.C. § 102(b) as anticipated by Mak et al (USP 4,961,391); Claims 7-10, 13, and 20 were rejected under 35 U.S.C. § 102(b) as anticipated by Fochtman et al (USP 4,977,839); Claims 13-19, 21, 23-29, and 31 were rejected under 35 U.S.C. § 103(a) as unpatentable over Veltmann (USP 5,619,936) in view of Mak et al; Claims 32-33 were rejected under 35 U.S.C. § 103(a) as unpatentable over Mak et al in view of Veltmann; Claims 34 and 35 were allowed; and Claim 30 was indicated as allowable if rewritten in independent form.

Applicants thank the Examiner for the indication of allowable subject matter.

Regarding the objection to the IDS filed August 22, 2001, Applicants note that Document 8-501601 is the Japanese Publication of International Application No. PCT/US93/08462 (International Publication No. W094/06946), which is listed on the Information Disclosure Statement filed August 22, 2001. Accordingly, it is respectfully requested this objection be withdrawn.

Claims 1-6, 11, 12, 22, 23, 25-29, and 36 stand rejected under 35 U.S.C. § 102(b) as anticipated by Mak et al. This rejection is respectfully traversed.

Amended Claim 1 is directed to a method of reducing the concentration of organic halides within soil. The method includes introducing the first soil to a hermetic zone, pumping out the hermetic zone to a vacuum state and thermally decomposing at least a part

of the organic halides by heating the first soil in the hermetic zone under the vacuum state.

Amended Claims 11, 22, and 36 include similar features.

Thus, the organic halides are thermally decomposed by heating the soil under a vacuum state, as opposed to merely heating the soil under reduced pressure (as originally claimed).

Two advantages of thermally decomposing halides under vacuum are as follows. First, by increasing the mean free path of all molecules in the chamber, *i.e.*, by decreasing molecular collisions, the vacuum reduces the generation and regeneration of organic halides. Second, by decreasing the partial pressure of all compounds in the chamber, the vacuum reduces the concentration of dioxins in both the gas phase and the heated residue. The advantages are affirmed in the results listed by Applicants' Figure 12.

Mak et al, on the contrary, does not suggest or disclose the use of a vacuum state for soil remediation. Rather, Mak et al teaches the use a purge gas, which is pumped into the chamber at a steady flow rate (col. 5, lines 41-50) and prohibits the chamber from reaching or sustaining a vacuum state. Further, because Mak et al is concerned with varying oxygen concentrations to prevent the combustion of vaporized components (col. 9, lines 51-54), Mak et al would not suggest a vacuum heating process. Applicants, on the other hand, have recognized and employed the advantages of a vacuum state to achieve a unique method.

In acknowledgement of their achievement, the Applicants' novel approach has already been presented by the following reviews of several academic societies:

"Organohalogen Compounds Vol. 54", 2001, page 157 (Attachment I); "Summary and Supplement", "21<sup>st</sup> International Symposium on Halogenated Environmental Organic Pollutants and POPS", page 50, fifth paragraph (Attachment II); "Organohalogen Compounds Vol. 58", 2002 (Attachment III); and "Organohalogen Compounds Vol. 63" of 2003

(Attachment IV). Copies of the relevant pages of these documents are provided, herewith, for the Examiner's review.

Accordingly, it is respectfully requested this rejection be withdrawn.

Claims 7-10, 13, and 20 stand rejected under 35 USC 102(b) as anticipated by Fochtman et al. This rejection is respectfully traversed.

Independent Claim 7 is directed to a method for reducing the concentration of organic halides within soil. The method's final step calls for cooling the heated residue of the first soil after the hermetic zone is purged by a purge gas. The purge gas is substantially free of organic halides and, therefore, incapable of generating organic halides.

Fochtman et al does not teach this final step. Moreover, the system taught by Fochtman et al is susceptible to generating organic halides. It is susceptible to doing so because it utilizes water spray 8 to "cool the effluent" (col. 15, lines 52-55) and nitrogen to "assist in carrying away evolved vapors from the heated feed" (col. 16, lines 9-12). Consequently, when heated residue is cooled at atmospheric pressure, there is a potential for generating and regenerating organic halides, such as dioxins. As stated, the purge gas recited in Applicants' Claim 7 prevents the occurrence of such an event, and therefore distinguishes the claimed invention from the system taught by Fochtman et al. Accordingly, it is respectfully requested this rejection be withdrawn.

Claims 13-19, 21, 23-29, and 31 stand rejected under 35 § USC 103(a) as unpatentable over Veltmann in view of Mak et al. This rejection is respectfully traversed.

As stated above, Mak et al teaches to control the oxygen concentration during thermal decomposition by having a purge gas steadily flow into the chamber. Thus, the purge gas of Mak et al comprises oxygen. To the contrary, independent Claims 13 and 23 recite the use of a "purge gas which is substantially organic halide-free." Thus, unlike the purge gas taught in Mak et al, the purge gas taught by Applicants will not contribute to the generation of organic

halides when cooling the heated residue at atmospheric pressure. Thus, the combination of Mak et al with Veltman does not anticipate the features of Claims 13 and 23. Accordingly, it is respectfully requested this rejection be withdrawn.

Claims 32 and 33 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Mak et al in view of Veltman. This rejection is respectfully traversed.

As previously explained, the chamber taught by Mak et al cannot achieve or sustain a vacuum state, because of the steady flow of gas pumped into the chamber. Thus, the combination of Mak et al with Veltman does not anticipate the features of Claims 32 and 33. Accordingly, it is respectfully requested this rejection be withdrawn.

In addition, new Claims 37-45 have been added to set forth this invention in a varying scope, and Applicants submit the new claims are supported by the originally-filed application. In particular, new Claims 37-45 are similar to Claims 13-21, but have been drafted to not use means-plus-function terminology. It is respectfully submitted new Claims 37-45 are allowable for similar reasons as Claims 13-21.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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